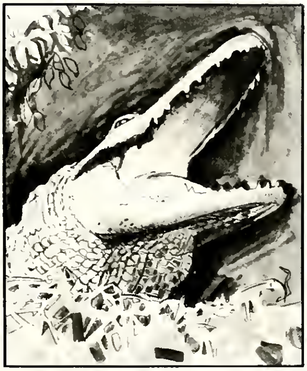

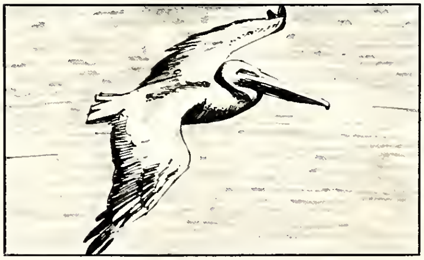

LOUISIANA DEPARTMENT OF WILDLIFE AND FISHERIES

annual report

1981

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Annual Report 1981

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Wildlife and Fisheries

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A Message from the Secretary

Because hundreds of thousands of Louisiana's citizens are dependent upon wise and prudent management and utilization of the state's wildlife and fisheries resources, either for outdoor recreation or for a livelihood, the responsibilities and programs of the Department of Wildlife and Fisheries are broad and diversified.

This annual report to the Governor and members of the Louisiana Legislature will provide details on the many ongoing programs to enhance, replenish, perpetuate and properly harvest wildlife resources of the state.

These programs of activity to assure ample stocks of renewable wildlife and fisheries resources will be dealt with comprehensively in those sections of the report pertaining to operation of the major divisions in the Office of Wildlife and in the Office of Coastal and Marine Resources.

The administration of the overall department, including a report from the Office of Management and Finance, will be found in that section dealing with the Office of the Secretary.

In this message, serving as a foreword, I seek to focus attention on some of the most important activities of the department during calendar year 1981, as they affect the people of Louisiana.

Two land purchases and donation of 4,159 acres of wildlife land to the department by the International Paper Company in late January of 1981 added 24,690 acres of prime wildlife land to the department's wildlife management area system.

This network of wooded areas and wetlands, located strategically around the state, consists of approximately one million acres of wildlife habitat that is open to the public for many outdoor recreational activities in addition to hunting and fishing.

Of this total acreage, the department owns outright some 285,000 acres. Approximately 195,000 acres are in bottomland hardwoods and there are about 69,000 acres in marshes and desirable wetlands.

The purchase of 20,532 acres in Caldwell and Catahoula Parishes for $10,030,000 marked the first permanent acquisition of land under the Treen Administration, and was made possible by an appropriation during the 1980 regular session of the legislature.

The first purchase involved 18,511 acres of land in east-central Caldwell Parish. This land, known as the Bodcaw tract, was purchased from International Paper Company for $8,300,000. The area adjoins the department-owned Boeuf Wildlife Management Area and was made a part of it, increasing the total size to 38,442 acres.

The second purchase involved 2,020 acres in Catahoula Parish which was purchased from International Paper Company for $1,700,000. At the time of this acquisition, International Paper Company donated an additional 4,159 acres of adjacent land to the department, bringing this new wildlife management area to 6,179 acres. It was named the Sicily Island Hills WMA and brought to 35 the number of such areas making up the statewide system.

In years to come, when suitable wildlife lands are no longer obtainable or affordable, this program will stand out as the most important effort at the state level to provide public outdoor recreational areas for the people of Louisiana.

Another major accomplishment of the past year was conducting the first statewide alligator hunting season since the early 1960's when Louisiana took the initiative and closed all alligator hunting to protect and replenish the species.

Since 1972, when the first legal alligator hunting was allowed in a small three-parish area of southwest Louisiana, alligator hunting has proved increasingly profitable for state trappers. This has been without any harm to the resource, and consequently the department began pressing for a statewide season.

It was a major uphill battle for a number of years because the alligator figured prominently in the endangered species program. Finally, in 1979, the hunting area along the Louisiana coast was expanded to include 12 parishes. The results were increasingly beneficial to Louisiana trappers and landowners, but careful census of alligator populations indicated a statewide season was in order.

In 1981, U.S. Fish and Wildlife Service reclassified the alligator in all remaining parishes and this led to the first statewide hunt in 18 years. It resulted in 14,600 alligators being taken and pumped $2 million into the hands of trappers. It appears that the annual harvest will increase by several thousand alligators and a total annual income from alligators of about $2.5 million will be realized.

Another significant resource management accomplishment was the statewide initiation of the Intensive Deer Management Program. This program which provides for a longer period of time in which to harvest antlerless deer, with appropriate controls, will provide an opportunity for private landowners and hunting clubs to selectively harvest deer and thereby improve quality in their deer herds. About 120 hunting clubs and private landowners enrolled in the program in 1981, and we anticipate a significant increase in enrollment in 1982.

Probably the most significant activity of the department in 1981 was its role in working closely with Gov. Treen in formulating an acceptable plan for settlement of the Atchafalaya Basin controversy.

Gov. Treen's final plan, one in which the department was deeply involved, proved acceptable to landowners, sportsmen, conservationists, environmentalists, those concerned with flood control, and all federal and state agencies involved.

Much remains to be done to implement this plan. For it to be successful, there must be cooperative funding by the U.S. government and the State of Louisiana for approximately 48,000 acres of Atchafalaya Basin land from willing sellers. The lion's share must be obtained from the federal government. The state's participation is a matter that must be addressed by the legislature.

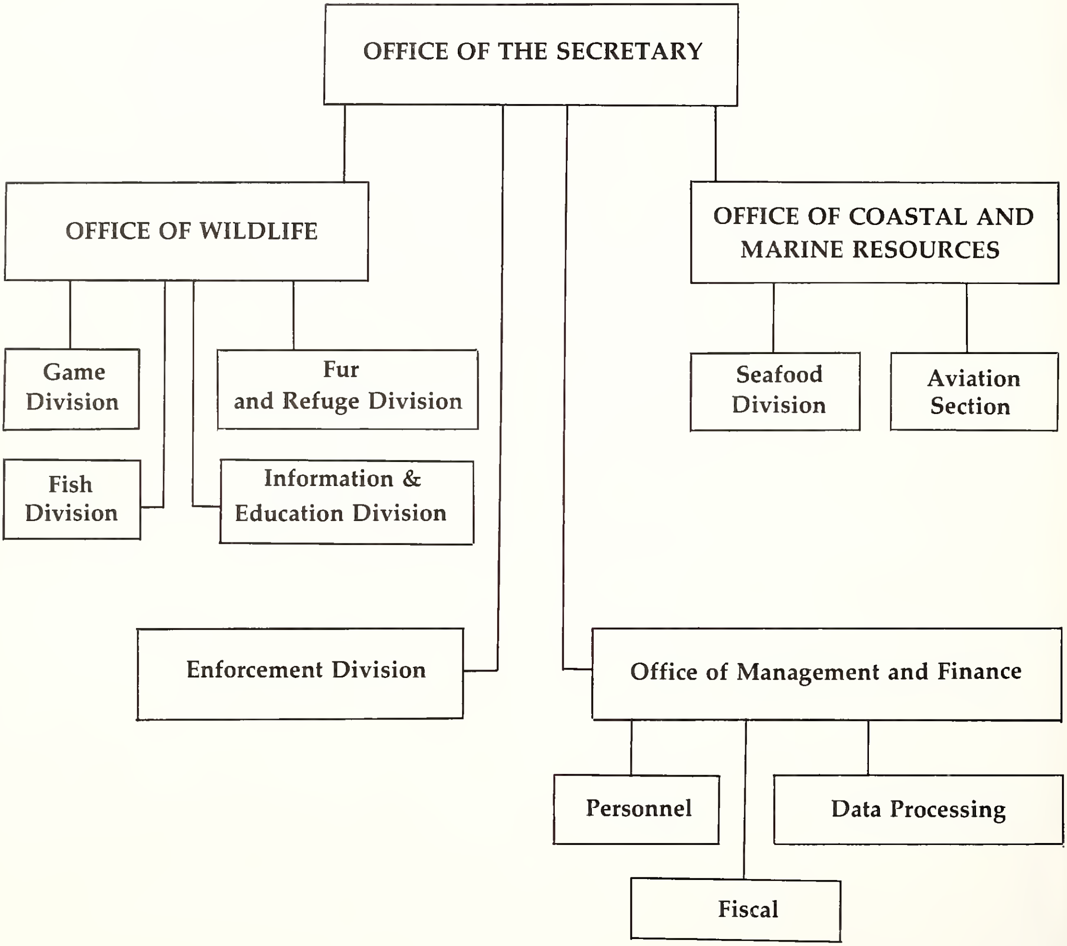
One of the key components in the governor's acceptable plan for the Atchafalaya was donation by Dow Chemical Company of more than 46,000 acres in and adjacent to the Basin. With that donation and the possible purchase of about 48,000 acres, it will mean that some 240,000 acres of the Basin will be open to public use for all time.

It is significant to report also that a new record was established in shrimp production in Louisiana waters in 1981. Some 69,522,000 pounds of headless shrimp were landed, bringing shrimpers a dockside value of $131,466,000. Production last year was 3,300,000 pounds of headless shrimp greater than in the previous record year of 1978.

Respectfully submitted,

Jesse J. Guidry
Secretary

ADMINISTRATIVE STRUCTURE CHART



Office of the Secretary

As chief administrative officer of the Department of Wildlife and Fisheries, the secretary is responsible for all wildlife and fisheries resource management activities in Louisiana. He is also deeply involved in conservation matters vital to other states on both national and international levels. Primary objectives are to insure that the highest possible priorities are given at all times to wildlife and fisheries resources management and enhancement.

Although administration of five major divisions within the department is delegated to assistant secretaries, responsibility for administration of the Office of Management and Finance (which includes Personnel), the Enforcement Division, and the Marine Maintenance and Communications Section remain directly in the Office of the Secretary.

Enforcement Division

The Enforcement Division is charged with enforcement of all of the laws enacted by the Louisiana Legislature applying to wildlife and fisheries resources as well as applicable portions of the state's Boating Act.

In addition, the division assists federal enforcement agents in the enforcement of those laws pertaining to migratory wildlife and endangered species.

In times of emergency or natural disaster, the division cooperates fully with all other law enforcement agencies of the state, and is an integral part of the Civil Defense action plan whenever the need arises.

Primarily, the division is charged with enforcement of the laws which pertain to the protection of the wildlife and fisheries resources of the state; apprehension of violators of those laws; preparation of cases for prosecution; and appearances in court to offer testimony on behalf of the state and its citizens; enforcing provisions of the Boating Law relative to safe operation of boats on Louisiana waters and assuring that all boats are properly registered and equipped with safety devices as detailed by law; and may enforce all laws of the State of Louisiana.

The Enforcement Division has a primary objective of carrying out its assigned duties in such a manner as to insure perpetuation of wildlife and fisheries resources and allow implementation of the technical works of the department's other divisions that can only be fully realized by compliance with all game and fish laws.

This division has 254 positions. In 1981, the division was completely restructured in order that it could better carry out its assigned duties and best serve the people of Louisiana.

Under the reorganization taking place in 1981, the state was divided into eight regions. Each region is staffed by a major and a secretary. The regions are further divided into districts which are made up of two or more parishes. Each district is headed by a captain who has responsibility for the overall enforcement program within his area.

Under provision of the new structure, each captain has the option of moving his agents to problem areas within his district. This has eliminated the parish-only concept of enforcement authority.

There are 212 wildlife agents in the field. These, of course, are in addition to the supervisory personnel and secretarial workers in the eight regions mentioned.

Statistically, on a statewide basis, each agent has responsibility over 18,951 people, is expected to cover 240 square miles which contain an average of 1,332 registered boats, 478 commercial fishermen, and 4,626 sport fishermen and hunters.

In 1981, wildlife agents issued over 23,000 citations for violations of hunting, fishing, and boating laws and regulations. This set a new record in the total number of citations for any single year in the department's history.

Additionally, during 1981, wildlife agents also participated in investigations of boating accidents, accidental drownings, and rescue work. They were called upon and assisted in times of flooding.

Some agents gave lectures at schools and spoke before conservation organizations and hunting clubs. Approximately 30 agents are actively involved in the department's hunter safety training program, with some providing hunter safety training on their own time.

Restructuring of the division has allowed its regional supervisors to concentrate their efforts in administrative work, assisting with preparation of budgets, control or repair and maintenance of equipment, and overall supervision of enforcement activities in their respective regions.

At the field supervision level, there is now a work scheduling procedure that holds each field agent accountable for his 40 hour work week. This is accomplished through work schedules assigned by the field supervisors. Each agent is also responsible for the maintenance of assigned vehicles and boats. Restructuring of field operations has increased services to the public.

At the division headquarters level, operations have been streamlined to eliminate unnecessary paper work. A quartermaster system was established during the year for the issuing of uniforms and supplies. New purchasing procedures were instituted which not only allowed the division to save money, but allowed it to purchase much needed supplies for the field agents so they could be better equipped in the field.

Goals of the division for 1982 include broadening a preventive maintenance program for vehicles and boats to reduce expensive repairs. One objective is to equip all field agents with four-wheel-drive vehicles and three-wheel all-terrain cycles. The latter would allow agents to patrol off-road areas and back woods which they have been unable to patrol except on foot in the past. These types of vehicles would not only allow agents to patrol areas that were only lightly patrolled in the past but would eliminate costly repairs to standard pick-up trucks. It would also provide the state with a ready force of off-road, all-terrain vehicles to assist other law enforcement agencies and Civil Defense when the need arises.

Office of Management and Finance

Data processing, both scientific and administrative, has been merged into a single division under this office. A Univac 1100/60 was installed in the department's Baton Rouge office as this report was being finalized at a cost only slightly higher than the computer systems being replaced. The new system will provide an expanded level of data processing which allows all levels of personnel on-line capability with minimal training.

Procedures have been developed by which all budget units must thoroughly justify and provide substantiating back-up in the form of budgetary vendor quotations for capital outlay and operating budget requests.

There has been expanded emphasis on program analysis through collection and monitoring of the department's operating expenses.

The Department of Wildlife and Fisheries received revenue in the amount of $36,060,091 for the calendar year 1981. Monies collected were credited to the following funds:

Conservation Fund	
Taxes	$2,100,000
Royalties	9,500,000
Rental of land	500,000
Bonuses on land	1,079,616
License sales	6,000,600
Miscellaneous	350,697
	$19,530,913
Rockefeller Refuge Fund	
Royalties	$8,021,759
Interest	1,766,436
Other Income	913,945
	$10,702,140
Marsh Island Fund	
Royalties	$ 279,754
Interest	1,167,530
Other Income	279,754
	$1,727,038
Federal Funds	$4,100,000
Grand Total Revenue	$36,060,091

The department issued 65,000 commercial licenses and 1,068,005 sport licenses in 1981. There currently are in excess of 300,000 motorboats registered with the department, of which 11,000 were newly registered in 1981.

The department's budget for 1981 totaled $29,000,000 with monies allocated to the divisions and sections within the department as follows:

1%	Executive	$ 145,000
10%	Management and Finance	2,900,000
24%	Enforcement Division	6,960,000
11%	Fish Division	3,190,000
13%	Fur and Refuge Division	3,770,000
15%	Game Division	4,495,000
4%	Information & Education Division	1,160,000
2%	Marine Maintenance and Communications Section	580,000
1%	Aviation Section	290,000
19%	Seafood Division	5,510,000
		$29,000,000

Personnel Section

Most frequently used data on the department's 832 employees have been entered into department computers and periodic printouts provide the section with current information on every employee.

Identification of employees who are eligible for step increases in salary is provided each month and the department's system of leave accounting has been computerized.

A Kardex filing system is operational for the maintenance of employee service record cards and leave cards, along with other employee information.

The section assists in participation by employees in formal inservice training programs which are designed to improve employee performance capabilities. Various publications pertaining to effective supervision and management are currently under subscription and many employees have participated in functional training courses offered by institutions and organizations outside the department.

Future progress toward the ultimate goal for complete and comprehensive personnel management and training will, of course, be contingent upon the availability of funds and supporting personnel to implement and sustain additional programs which will enhance the quality of employee services to the state.

Marine Maintenance and Communications Section

This section, located on a wharf on the New Basin Canal in New Orleans near Lake Pontchartrain houses five major activities which make up the department's largest maintenance section.

The machine and outboard motor shops install, check out, and maintain the inboard and outboard engines used on the department's boats. This equipment now consists of numerous outboard engines ranging from 10 h.p. to 150 h.p.; outboard hulls ranging from 10 feet to 18 feet; and inboard vessels ranging from 19 feet to 60 feet in length.

The structural repairs and paint shops are equipped to make repairs on wooden, fiberglass, and aluminum boats, as well as to boat trailers. This shop operates a stiff-leg derrick dry dock which can haul out for repairs craft up to 50 feet in length. These repairs range from painting bottom damage, to hull repair, deck replacement, to interior cabin work. Frequently a boat will be completely remodeled to better serve a specific need.

The communication center located at the wharf provides the department its only 24-hour a day radio operation. Radio operators are on duty around the clock to assure that outlying camps, boats, airplanes, and agents working at night have available routine and emergency radio communications capability.

Addition of the department's toll-free number 1-800-442-2511 for reporting violations of fish and game laws and boating accidents was designated to the duties of the radio operators at this installation.

The radio repair shop installs and maintains the department's statewide communication system. The system now contains 33 base stations, 580 mobile units, 82 walkie-talkie units, 68 boat radios and 8 aircraft radios. Besides maintaining a radio and electronic shop at the wharf, two vehicles are equipped to do on-the-spot repairs statewide.

The office and administrative branch of the section maintains repair and maintenance records on all marine and electronic equipment used by the department, processes all warranty and insurance claims within the marine and electronic field, and provides purchase specifications for all marine and electronic supplies and equipment.

Office of Wildlife

The Office of Wildlife, supervised by one of two assistant secretaries reporting directly to the department secretary, is responsible for administration of four major divisions within the department: fish, game, fur & refuge, and information & education. Through these divisions and their numerous sections, the Office of Wildlife is responsible for the management of the state's wildlife and fisheries resources and for informing and educating the general public about these vast renewable resources and the department's role in managing them.

Fish Division

Louisiana's fisheries resources are a vital part of the state's economy both from a recreational and commercial standpoint. The Fish Division is responsible for studying, managing, protecting, and replenishing the fisheries of the state, and controlling undesirable aquatic vegetation that hampers management, navigation and fisherman access in Louisiana waterways.

The division conducts research and management programs and provides technical assistance. Certain projects that deal with sport fish restoration (research, survey, development, or technical assistance) are funded wholly or partially through the Dingell-Johnson federal aid program.

There are two sections within the Fish Division: fisheries, and aquatic plant research and control.

Fisheries Section

Statewide Lake Management Program

Statewide lake management is an important program of the Fish Division to which many other of the division's programs are related. Under this program, fish populations in lakes throughout the state are sampled each year and pertinent data collected which provides information necessary to plan effective management including adoption of proper regulations on species to be taken, seasonal harvests, types of gear, etc.

In 1981, fish populations in 25 lakes were studied using rotenone, and management recommendations were made for these lakes.

A creel survey of two lakes, Bussey and D'Arbonne, is being conducted in conjunction with the lake management program to determine species, size and weight of fish being utilized by fishermen and the amount of time required to catch these fish. This study will help evaluate fish management practices.

In another study on Lake D'Arbonne information is being collected on the direct and indirect effects of drawdowns on movement, spawning success and foods eaten by largemouth bass and crappie. This will be used to provide optimum management of the sportfishery in Lake D'Arbonne and also help in the development of management plans for other reservoirs in the state.

Striped Bass Program

This program is designed to produce striped bass and hybrid striped bass fingerlings in numbers great enough for stocking in selected lakes in Louisiana.

In 1981, 11,581,382 striped bass fry and 3,170,000 hybrid striped bass fry were produced at the department's Toledo Bend facility. A total of 2,183,117 fingerlings were stocked in the Mermentau and Pearl Rivers and in 21 lakes around the state.

Popular striped bass and hybrid striped bass fisheries have been established in several lakes including Toledo Bend, D'Arbonne, Claiborne, False River, Indian Creek, and Concordia.

The striped bass is a voracious predator and has the ability to control high forage fish populations, especially shad. Evaluations are now being made of all lakes which have been stocked with these fish.

In a current study on Lake Bistineau, possible competition between striped bass and largemouth bass is being analyzed.

A study on Toledo Bend Reservoir is underway to determine the movements of adult striped bass, relationship of summer water temperature preference of striped bass and annual summer mortalities, seasonal food habits of adult striped bass, and seasonal presence and extent of temperature and chemical stratification in the reservoir. This information should aid fishermen in avoiding areas void of fish, thus improving catch rates per fishing effort.

Another major segment of the striped bass program is aimed at establishing a reproducing population of striped bass in Louisiana's coastal estuaries and rivers. Louisiana once had a fishable population in the coastal streams of the southeastern portion of the state but an earlier study determined that this native population no longer existed or was insignificant. The present project involves restocking in the southeastern coastal area as well as along the rest of the coast and coastal rivers. A successful fisheries is now being enjoyed in several of the streams stocked.

Farm Pond Extension Program

Numerous new farm ponds each year and older ponds that have become out of balance require hatchery raised fingerlings and/or technical advice on the management of fish populations to produce desirable fishing success. The goal of this program is to provide the maximum number of man-days of good fishing in privately-owned ponds and small lakes. This is accomplished through advice given to pond owners on proper construction, stocking, fertilization, weed control, fish population control and better utilization of the production through harvest by fishermen.

Through this program, fishing success can be increased by as much as several thousand man-days and the life expectancy of each pond increased. Proper stocking, management and harvesting can at least triple the life span of productive fishing, thus reducing the frequency of renovation costs, time lost for stocking, etc.

In fiscal year 1981, 1,069 farm ponds comprising 3,072 acres were stocked with largemouth bass and bluegill and owners were given technical advice on proper management of fish populations in the ponds. Technical advice was also given to some 500 other farm pond owners whose ponds did not require stocking.

Fish Hatchery Program

Three state-owned fish hatcheries (a total of 50 acres) are operated by the Fish Division. In fiscal year 1981, 300,000 largemouth bass fingerlings, 2,000,000 bream (bluegill and redear) fingerlings, 300,000 striped bass fingerlings, 170,000 hybrid striped bass fingerlings and 10,750 crappie were produced.

Additional fingerlings of largemouth bass, bluegill, striped bass, hybrid striped bass and channel and blue catfish necessary to fulfill the Fish Division's needs and requests for stocking were also produced cooperatively at the Federal Fish Hatchery in Natchitoches, Louisiana. The Fish Division provided transportation for statewide stocking of designated Louisiana fingerlings produced at this federal hatchery and provided the hatchery with striped bass fry and hybrid striped bass fry for subsequent fingerling production to be released in Louisiana waters.

During fiscal year 1980-81, 55,050 blue and channel catfish were stocked in eight lakes in Louisiana.

Florida Bass Program

Florida largemouth bass fingerlings were released in the Tchefuncte River, Pearl River Locks, and Cross Lake during 1981. Division biologists are studying their survival, growth, food habits, catchability and effect on our native fish populations.

Grass Carp (White Amur) Monitoring Program

Fish division biologists in cooperation with personnel of the LSU Cooperative Fisheries Unit are monitoring the invasion of the exotic grass carp into this state. Natural reproduction of grass carp has been substantiated in the Atchafalaya River.

Fish Kill Investigations Program

Fisheries biologists investigate natural fish kills that occur in water bodies to determine the cause of the kill and make recommendations for alleviating the situation when possible. Reports of the findings are furnished to individuals, groups, public agencies and news media. Fish Division biologists also work with environmental resource specialists of the Department of Natural Resources when investigating fish kills thought to be caused by industrial pollution. The main function of the fisheries biologist when investigating this type of kill is to assess the species and quantity of fish killed and their monetary value. There are approximately 75 to 100 major and minor fish kill investigations made annually.

Commercial Catfish Farming Extension Program

This program provides commercial catfish farmers essential advice and technical assistance on stocking rates, proper pond construction, water quality maintenance, nutritional requirements, methods of feeding, harvesting and handling procedures, and very importantly, the identification and treatment of catfish diseases and parasites that are a constant threat to the catfish crop.

Commercial Crawfish Farming Extension Program

Fisheries biologists provide advice on proper management of crawfish ponds to farmers at their request. This service is especially important in the southwestern part of the state where the majority of crawfish farms occur. Assistance enables crawfish farmers to achieve maximum production of the crawfish crop.

To attain greater knowledge of crawfish farming for more efficient harvest and utilization of crawfish, the Fish Division is involved in a Cooperative Crawfish Research project being conducted at the University of Southwestern Louisiana.

Boat Ramp Maintenance

The Fish Division is responsible for inspection and maintenance of approximately 40 department boat ramps located throughout the state, used free of charge by the general public. Monthly inspections of each boat ramp were made during 1981 and maintenance work performed.

University Cooperative Programs

The Fish Division is involved in cooperative programs with various universities including Southeastern Cooperative Fish Parasite and Disease Study at Auburn University, Cooperative Fish Pesticide Study at Northeast Louisiana State University, cooperative crawfish research at the University of Southwestern Louisiana, and the Louisiana Cooperative Fisheries Unit at Louisiana State University in Baton Rouge.

Special Projects

Other studies or programs currently underway in the Fisheries Section because of special needs or special problems in the state include:

- A movement study of estuarine sportfish to aid in management plans and regulations for spotted seatrout, sand seatrout, red drum, black drum and Atlantic croaker;
- Life history studies and evaluation of harvest techniques of spotted seatrout in Calcasieu Lake to be used to formulate management recommendations for the sport and commercial harvest of this species; and
- A study to determine length at maturity and time of spawning for blue and channel catfish in the lower Atchafalaya Basin to be used to formulate harvest and water management recommendations which will enhance and protect the present fishery.

Aquatic Plant Research and Control Section

This section conducts research on troublesome aquatic plants in Louisiana waters, provides technical information on control methods, and supervises and conducts a statewide program of spraying water hyacinths on public waters in Louisiana.

During the fiscal year 1980-81, the aquatic weed control program provided substantial benefits to 3.2 million Louisianians. The section effectively applied herbicide to 38,949 acres of water hyacinth infestation. This herbicide application program in combination with expanding populations of biological control agents and some adverse environmental conditions resulted in a reduction of acres of water hyacinth infestation from 854,900 to 340,000.

Herbicide application to areas infested with water elm on Catahoula Lake resulted in the control of seedling reinfestation on 2,700 acres and reclamation of 720 acres of dense overstory as prime waterfowl food producing areas.

The major accomplishments in the biological control program was the successful establishment of overwintering populations of the water hyacinth moth. The addition of this specific insect should provide invaluable benefits to the water hyacinth control program in the near future.

Aquatic weed density investigations and management recommendations were made on 25 lakes. The primary objective of this work was to obtain accurate records of aquatic weed infestation in Louisiana waterways so that a workable management plan can be prepared to obtain maximum control of the aquatic weed problem.

Limited applications of herbicides were made to submersed aquatic weeds in the Lake Catherine, Chef Menteur and North Shore areas. These applications were made to demonstrate to the local people the safe use of an effective herbicide. The results of these demonstrations will be used to formulate recommendations and application techniques in future submersed aquatic weed control work in these areas.

Ongoing projects of the Aquatic Plant Research and Control Section include:

- A large-scale operations management test of insects and diseases for control of water hyacinth in Louisiana;
- Evaluation of new herbicides to determine their availability and effectiveness for use in aquatic weed control;
- Study of the effects of various aerial spray systems and additives on water hyacinth control to enable the aerial spray program to become safer and more cost effective;
- Study of hydrilla, a submersed aquatic plant that was discovered in Louisiana in 1973 and now is spreading in many areas of the state with the potential of becoming a more serious pest than water hyacinth in freshwater areas. Investigations will determine how environmental conditions and water fluctuations affect hydrilla, monitor its spread, and evaluate chemical, biological and mechanical methods of control; and,
- A study of chufa tuber and forage production within mature water elm - swamp privet zones, treated and untreated with specific herbicides, on Catahoula Lake to determine the loss of waterfowl food caused by the encroachment of water elm and swamp privet on the lake bed.

Game Division

The Game Division has the responsibility of preserving, maintaining, developing and, where feasible, increasing Louisiana's wildlife resources.

Within the Game Division is a Development Section in charge of development and maintenance of the department's wildlife management areas and other department maintenance and heavy equipment work; a Research Studies Section that includes dove, deer, waterfowl and turkey studies; an Upland Game Studies Section that includes the "Acres for Wildlife" program and quail, woodcock and pheasant studies; and an Animal Control Section.

Through 1981, this division also housed the Research Data Processing Section and the Ecological Studies Section. These have now been transferred to the Office of

Management and Finance and the Office of Coastal and Marine Resources, respectively.

Most of the programs and activities of the Game Division are funded through the Pittman-Robertson federal aid program (where funds are 75% federal - 25% state) and are administered by the Federal Aid Office of the Game Division. The exceptions are land acquisition, animal control, and carpentry work.

Development Section
Wildlife Management Areas

One of the most successful programs of the Louisiana Department of Wildlife and Fisheries has been the establishment and development of the wildlife management area system throughout the state.

Presently the department operates and manages 35 wildlife management areas (WMA's) comprising a total of approximately 800,000 acres. All areas are open to the public for hunting, fishing and other outdoor recreation.

District Activities

For wildlife management and administrative purposes in the Game Division, the state is divided into eight districts each with a district office, district supervisor and district biologists and technicians who are assigned to wildlife management areas or work throughout the district.

Activities in the districts include managing deer hunts on WMA's, answering animal nuisance calls, providing technical assistance, conducting control burns, trapping and banding waterfowl and turkey, conducting fur animal census, conducting deer range surveys, checking hunter bags, and giving programs to civic groups and hunting clubs, to name just a few.

District work is coordinated on the statewide level to provide data for better management of important wildlife species.

Research Studies Section
Dove

During May 1981, the dove call-count survey was conducted in Louisiana as in all other states. This annual survey of breeding mourning doves serves as the basis for setting dove hunting regulations each year.

In 1981, the dove study leader served on a state-federal report writing committee to evaluate the impact of September dove hunting on the dove population. A nationwide study was conducted to determine the extent and magnitude of dove nesting activity in September and to measure the impact of September hunting on the survival of eggs and nestlings. Biologists of this department and of the Cooperative Wildlife Research Unit at LSU collected data for two years in Louisiana for this study. The analysis of data and final report writing will be completed in 1982.

Deer

During the 1980-81 deer season, managed deer hunts, open to the public, were conducted on the state's 35 wildlife management areas. Department biologists recorded 39,391 hunter efforts and collected data from 1,865 deer harvested.

Annual inventories were made by our biologists to evaluate deer habitats and relative deer populations around the state. In addition to those made on WMA's, 127 separate surveys were made during 1981 in 62 parishes. Findings from these surveys were essential to the preparation of 1981-82 deer hunting season regulations for the entire state.

A new deer management program for private lands was initiated in 1981: the Intensive Deer Management Program. Special surveys and assistance was provided by biologists to more than 120 participating clubs and hunting groups.

Health surveys were conducted of 23 deer herds in the state, including herds on 3 WMA's. In-depth studies were made of Saline WMA and Avery Island deer herds by the Southeastern Cooperative Wildlife Disease Study. Other studies were in conjunction with parasite count investigations made in cooperation with the LSU School of Veterinary Medicine.

A research project pertaining to the illegal spotlighting of deer from public roads was implemented in 1981. Lifelike deer silhouettes with reflective eyes were placed in suspected night hunting locations and biologists monitored the motorist-poacher response.

Waterfowl

Aerial waterfowl surveys were conducted by department personnel twice each month from September through January to help determine migration characteristics and relative size and distribution of waterfowl populations. The number of waterfowl in the coastal marshes and ricefields was found to be roughly the same in 1981 as in the last 5 years.

A lead shot study was completed this year with some 16,000 gizzards from hunter-bagged ducks collected and examined for the presence of ingested lead shot. Results showed 15% of mallards, 17% of pintails and 26% of mottled ducks examined contained ingested lead shot.

A zoning study, concerning Louisiana's alignment in the Mississippi or Central Flyway, is in its final stages. All banding has been completed with approximately 30,000 waterfowl trapped and banded during the project.

A study to gather biological data of the white-fronted goose is in progress and should be completed in 1983.

Approximately 150 mottled ducks were trapped on Marsh Island Refuge and transported to Arkansas and South Carolina. These birds were traded for wild turkeys.

Waterfowl disease problems investigated in 1981 included Catahoula Lake where more than 250 ducks died of lead poisoning and a botulism outbreak on Avoca Island near Morgan City. Additionally, waterfowl were collected in Southwest Louisiana and tested for possible endrin contamination due to pesticide spraying in Montana.

Turkey

Woodlands in parts of Kisatchie National Forest and areas of Allen, Beauregard, Bienville, Caldwell, Franklin, Grant, Jackson, Livingston, Madison, Natchitoches, Sabine, Winn and Union Parishes were surveyed in 1981 to identify areas of suitable turkey habitat.

Evaluations were made of previously stocked turkeys on Ft. Polk, Russel Sage, Saline, Union and West Bay WMA's, and a hunting club in East Carroll Parish, to study factors responsible for success or failure of turkey releases.

During 1981, 161 turkeys were caught and moved to 13 new release sites in Louisiana.

Eight turkeys in Morehouse and Union Parishes were captured, instrumented with radio-telemetry equipment and released on study areas within those parishes. These turkeys were monitored during the spring and summer of 1981. Preliminary results indicate wild turkey movement is highly variable.

The food habits of wild turkeys from the Mississippi riverfront hardwood and mixed pine - hardwood forest type were studied during 1981. Ten crops and 80 droppings were analyzed.

Upland Game Studies Section

Acres for Wildlife

Enrollment in the "Acres for Wildlife" program in 1981 reached 437 cooperators (almost 100 of which were hunting clubs with large memberships) and lands in excess of 340,000 acres. Program biologists inspected land, prepared management plans and provided seeds for wildlife food plantings.

Quail

Upland game development work on WMA's and private land open to the public by Cooperative Management Agreements continued during 1981. Food plots totalling 650 acres were planted, 300 acres were left fallow, disced or bushhogged, and 10,000 acres were control burned by department personnel or by others at the department's request.

Woodcock

Research on woodcock egg development began in 1980 and continued in 1981. Of 205 female birds collected February 1-14, 1981, only three percent showed enlarged ovaries and none had eggs in the oviduct. Results from the two years indicate only a small resident population exists in Louisiana. This project will continue for one more year.

Pheasant

Pheasant releases made in Cameron and Vermilion Parishes were checked by spring crowing cock census routes. Crowing line counts were up by 100% over the spring of 1980. An additional 50 wild-trapped pheasants from the Texas Parks and Wildlife Department were released on the Lake Arthur study area in March of 1980. Visual observations of two release sites were made weekly during the nesting season with no broods sighted.

Animal Control Section

During 1981, the Animal Control Section received 374 requests for assistance from landowners. Beaver damage accounted for 75% of the requests, with the remaining 25% being mainly for coyote damage. Other species removed upon landowner request were red fox, gray fox, skunk, ferel dogs, raccoon and bobcat.

Three trappers were assigned to Black, Saline and Iatt Lakes during the September alligator season to collect stomachs from alligators harvested for a food habits study of upland alligators.

Research Data Processing Section

Based on mail surveys of license holders, the research data processing section estimated that during the 1980-81 hunting season in Louisiana:

105,000 deer were killed by gun and bow hunters; 2,600,000 doves were killed by 92,000 dove hunters; 3,000,000 ducks were killed by 125,000 waterfowl hunters; and 3,500 turkeys were killed by 10,800 turkey hunters.

The research data processing section also compiles data for the Acres for Wildlife program, managed deer hunts, bird banding and other department programs.

Ecological Studies Section
(formerly, Environmental Section)

In 1981, the Ecological Studies Section evaluated and commented on 2,052 Section 10 and Section 404b permit applications to the U.S. Army Corps of Engineers and processed 992 coastal use permit applications. Action on these permit applications has resulted in a reduction of damages to fish and wildlife resources.

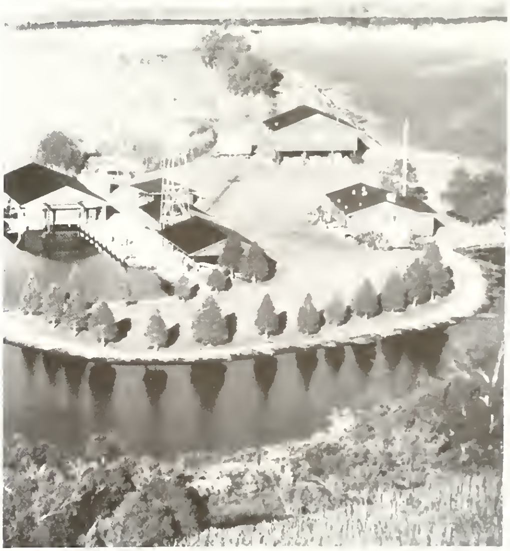
The Ecological Studies Section has the responsibility of protecting the Scenic Rivers System of the state. In 1981, 33 "Class B Use" permit applications for scenic rivers use were received and 16 permits were issued. A department booklet on the scenic rivers of Louisiana was revised for its fourth printing.

The Ecological Studies Section receives many inquiries for information on endangered species from various government agencies and private individuals.

The coordinator of this section represents the department at the monthly and special meetings of the state's Environmental Control Commission.

The Ecological Studies Section has been involved in the development of a multipurpose plan for the Atchafalaya Basin that addresses flood control, recreational usage needs, and environmental protection. Significant progress was made in 1981 that tied together various interests in the issue of land use control in the Basin. The department, represented by the Ecological Studies Section, took an active role as a member of the state's Working Group, appointed by Governor Treen, in developing the state's Basin real estate plan, and consistently sought to insure the preservation of fish and wildlife habitat and resources and guarantee public access and utilization of those resources.

In 1981, the department participated in numerous meetings with the Atchafalaya Basin Agency Management Group and provided a technical review of the Draft Environmental Impact Statement and feasibility report on the Basin project proposal in order to aid in the development of a final multipurpose plan incorporating features for flood control, environmental protection and resource management.



Fur and Refuge Division

The activities of the Fur and Refuge Division can be divided into three major categories: managing land which the department owns or leases, research into new and improved management practices for the state's fur and wildlife resources, and direct management and supervision of the state's fur and alligator resources.

Land Management

The Fur and Refuge Division is responsible for the management, development, and protection of four state owned and one leased refuge. These are the Rockefeller Wildlife Refuge, 82,000 acres; Marsh Island Wildlife Refuge, 78,000 acres; State Wildlife Refuge, 15,000 acres; St. Tammany Wildlife Refuge, 1,300 acres; and the Coulee Wildlife Refuge, 700 acres. The first three areas were donated to the state under conditional deeds of donation. The St. Tammany Wildlife Refuge was an outright purchase and the Coulee Wildlife Refuge is a lease from private individuals.

Each area is located in a different ecosystem and management programs have been created to enhance the environmental features for increased wildlife habitat. The refuges are wildlife sanctuaries and are managed primarily for migratory waterfowl. Rockefeller Wildlife Refuge is the most highly developed area and has been under an intensive management program since 1952. Conditions favoring waterfowl, fisheries, furbearers, alligators, and all forms of marsh life have been steadily improving. Rockefeller is a clear example of enhancement features that may be utilized to manage natural areas. Water management for animals and plants requires impoundments and control of water levels. Up to 1952 primitive marsh management techniques involved the occasional winter burning of accumulated vegetative debris and basic law enforcement.

Several legislative acts have established an interest bearing trust fund which will provide long range financial security for management activities on Rockefeller Refuge. The legislature has raised the level to $20 million and funds derived from present mineral production and interest are deposited into this fund until it reaches the desired level.

Marsh Island Wildlife Refuge has been developed similarly to Rockefeller Refuge. Large numbers of waterfowl winter at the refuge and the alligator has made such a comeback that the population can now be described as large. Biologically sound management programs are part of the long range management program for the refuge.

Monies derived from minerals have been placed in a $5 million trust fund and annual interest income provides for maintenance and development of the refuge. The deed of donation provides that surplus money from Marsh Island may be used for land acquisition on a statewide basis; to date almost 200,000 acres of wildlife habitat has been purchased with this fund.

State Wildlife Refuge was donated to the state in 1911. Due to its size and environmental features, refuge management stresses the maintenance of natural conditions. Low level weirs have been built in key areas to enhance water levels necessary for wintering waterfowl, furbearers and estuarine dependent species periodically inhabiting the area.

St. Tammany Wildlife Refuge was acquired in the early 1930's as part of the land which made up Fontainebleu State Park and the state hospital grounds. Little can be done however because of the area's small size and future plans should include the acquisition of adjacent property and conversion of the refuge to an expanded wildlife management area.

Coulee Wildlife Refuge is privately owned and leased to the department free of charge. This refuge should be maintained in its present state for as long as landowners are willing to make it available. Water control structures, road, and bridges have been built. Consideration should be given to purchasing the area to assure future waterfowl habitat.

The Fur and Refuge Division also manages four wildlife management areas. The difference is that a refuge is a wildlife sanctuary whereas a wildlife management area is managed to provide the best possible outdoor recreation for the state's hunters.

Pointe Au Chien Wildlife Management Area was purchased from Exxon in 1968 and provides excellent waterfowl hunting, fishing and other types of outdoor recreation. In managing the area some construction is anticipated to reduce deterioration of the marsh due to saltwater intrusion and to provide access points for public use.

Mineral activities on the area are monitored closely. Extensive law enforcement must be a major part of the program.

Salvador Wildlife Management Area is located on the upper fringe of the fresh marsh in St. Charles Parish and provides excellent habitat for waterfowl, alligator, and furbearing animals. There is a small herd of white-tailed deer on the area. The wildlife and excellent fresh water fishing have made this area one of the department's most intensively used wildlife management areas. In managing this area, the division hopes to maintain it in its present condition. This is especially important because the area's managment program has resulted in an increase in wildlife species, especially alligators, in the adjacent marshes.

Pass a Loutre Wildlife Management Area was established by the legislature in 1921 and has been managed since then as a public waterfowl hunting and fishing area. Its location on the active Mississippi River delta makes it excellent wildlife habitat which attracts hundreds of thousands of ducks. Management and enforcement has greatly benefited resident wildlife species on the area. Mineral activity has been coordinated with a program to maintain the excellent wildlife habitat.

Atchafalaya Delta Wildlife Management Area was leased recently from the Department of Natural Resources and will provide one of the most dynamic wildlife management areas in North America. Due to sediment deposited by the Atchafalaya River, the land size of the area is increasing by some 1,000 acres annually. The newly developed mudflats are excellent habitat for waterfowl, furbearers, and white-tailed deer. The division's management goal is to try to keep the Atchafalaya Delta in such condition that hunters and fishermen can enjoy the outdoor recreation opportunities provided.

Research

The Fur and Refuge Division's research program seeks information in three general areas: how to best manage the department owned 425,000 acres of coastal marsh lands, provide public information for management of similar privately owned areas along the coast, and to research the life histories and management aspects of coastal wildlife and fish species and statewide furbearing animals.

Rockefeller Refuge has been the site of the division's research center since 1952. Major research areas are marsh ecology, marsh wildlife, upland furbearers, statewide alligators, and estuarine related fisheries. Re-

search findings provide guidelines for practical management such as the construction of large impoundments, the installation of low level water control structures on Marsh Island and State Wildlife Refuges and the development of an organized burning and trapping program on all of the refuges and wildlife management areas.

Research seldom results in immediate direct application but research programs along the coast have benefited wildlife and fisheries conservation programs. The most dramatic example is the resurgence of the American alligator. Research and rigid law enforcement have contributed to the recovery of the species throughout the state. The 1981 season was the first statewide season in many years.

The alligator population will be monitored closely and an expanded harvest will be allowed as the population warrants it. Research has been expanded by the Fur and Refuge Division to more properly manage the valuable commercial species of furbearers outside the coastal marshes. This program was started as a result of the increased demand for long hair furs from central and north Louisiana.

Research at Rockefeller and supervision by refuge biologists has led to the re-establishment of a coastal population of brown pelicans, a bird which disappeared from the coast in the late 1960's.

Research at Rockefeller into the feasibility of establishing a non-migratory flock of Canada geese has been expanded to the point where nucleus flocks of geese have been provided to interested persons in Louisiana, Arkansas, and Mississippi.

Fisheries research at the refuge has provided information to landowners on the feasibility of commercial crawfish and catfish production in coastal areas. Research is also being carried out on the feasibility of multiple crawfish-waterfowl and shrimp-waterfowl production in coastal ponds. Research has been conducted into the effects of marsh management procedures on the fisheries resource and the life history of various species. Also, over 2 million striped bass fingerlings have been reared in facilities on the refuge and released into coastal streams in an attempt to re-establish this fish.

Research by the Fur and Refuge Division is directed toward long range management of resources and is practical in nature. The division provides funds not only for assistantships at the Cooperative Wildlife Research Unit at Louisiana State University but also for numerous other research grants. These programs are designed to provide information for wise management of natural resources. The division's research projects have been used by other states and foreign countries as models to begin their own management programs.

During 1981 fur and refuge biologists provided technical direction in the making of two films: "Louisiana Fur Trapping" and "Louisiana's Coastal Marsh: A Threatened Paradise." Eighteen technical articles were published and 38 technical projects begun or continued.

Resource Management

The Fur and Refuge Division has the responsibility of managing fur resources and alligators of the state. The overall goal of all division management is to perpetuate fur resources.

Unfortunately, the Louisiana coastal marsh is deteriorating as a result of a lack of fresh water, subsidence, and excessive saltwater intrusion. Numerous research projects are aimed at determining ways to reduce this deterioration. The state's refuges have led the way and the encouragement of the private sector to manage their marshes and wetlands in a productive manner will result in a continual strong economic return from the renewable resources of the state. Programs are designed to provide economic incentives to keep marshes as wetlands.

Statistics from the 1980-81 trapping season indicate that the sale of pelts and meat brought in over $18 million to the people of the state. Indications are that the 1981-82 season may be equally successful.

This past year, the fur season was zoned with different opening and closing dates for areas north and south of the I-10 Interstate Highway to access geographical and chronological fur primeness differences.

The 1981 alligator season, the first statewide season in many years, resulted in the harvest of 14,600 alligators with an estimated value of almost $2 million.

Information and Education Division

In 1981, the Information Section moved from New Orleans to the Baton Rouge office to be merged with the Education Section to form the newly created Information and Education Division.

The goal of the Information and Education Division is to inform and educate the general public about the incredible renewable wildlife and fisheries resources in our state and the department's role in managing those resources. In doing so, the division stresses responsible use of these resources whether it concerns department programs, recreational or commercial uses, or general conservation practices.

The Information Section is responsible for dissemination of information pertaining to all department programs, activities, and accomplishments. It handles virtually all such information disseminated by the department and receives most of the inquiries directed to the department for literature or information about all phases of department activities.

To convey information to the public the Information Section has numerous tools at its disposal. It sends out news releases and features, photographs, slides, and television and radio public service announcements.

The Information Section works with out-of-state writers, photographers, and movie producers who have an interest in learning about Louisiana wildlife and fisheries resources and the management of those resources. Such assistance often involves making travel arrangements for individuals visiting the state and accompanying them on their visits to natural areas.

For example, during the 1981 statewide alligator harvest Information Section personnel coordinated the visits of writers and photographers from England, Chicago, New York, Los Angeles and Atlanta.

The Education Section has fourteen wildlife management educators who meet the public in direct personal contact through lecture type educational programs. In 1981 these educators presented 2,351 programs to 270,029 citizens, including schools, colleges, churches, and civic and sportsman organizations.

The Education Section's mobile display exhibit van was on display for 51 days and viewed by an estimated 623,508 people.

Section personnel also constructed some 64 displays and exhibits at various fairs, festivals, and other events throughout the state. These exhibits were on display for 154 days and viewed by an estimated 791,641 people. Personnel also maintain permanent exhibits at the Louisiana State Capitol Building and the Natural Resources Building in Baton Rouge and at the state fairgrounds in Shreveport.

Perhaps the Information Section's most important function is the bimonthly publication of the *Louisiana Conservationist* magazine. The *Conservationist* has a circulation of 185,000 and new subscriptions are coming in at the rate of over 4,000 a year.

The magazine has won state, national, and international awards and is thought of as one of the most positive and informative publications produced on a state level. The magazine is sent to all individuals who are interested in the conservation and wise use of the state's resources.

The film program of the Information and Education Division continues to develop. In 1981 three new films were produced: "Atchafalaya Basin," "Louisiana's Coastal Marsh: a Threatened Paradise," and "Louisiana Fur Trapping."

"Louisiana's Coastal Marsh" was shown to a state senate committee looking into the serious problem of coastal erosion. "Louisiana Fur Trapping" premiered in January 1982 at the Fur and Wildlife Festival in Cameron where it was greeted enthusiastically. Both these films have become very popular.

The three new films were placed in the film library along with numerous other films now available for distribution to the public. In 1981 the film library filled 2,430 requests for educational films to schools and organizations. This was a 20% increase over the past year.

The Information and Education Division has also continued to increase its use of television and radio.

The division produced two public service announcements using members of the New Orleans Saints football team. The hunter safety and habitat preservation message of these two spots, plus the appeal of the professional football players, resulted in these spots being widely used around the state.

The Education Section's wildlife management educators presented 72 television programs and 44 radio programs which reached millions of people around the state.

In addition to these scheduled programs division personnel filled numerous requests from television stations for film or video tape to illustrate news events. For example, television stations in New Orleans and Baton Rouge were provided with footage of alligators in the wild to accompany stories on the statewide alligator harvest and illegal alligator hunting.

Hunter safety training is, of course, one of the most important jobs of the Education Section. In 1981 some 253 certified safe hunter clinics resulted in 9,064 students graduating as certified safe hunters and 151 new volunteer instructors being added as assistants.

Section personnel presented over a thousand general hunting and boating safety programs to various groups and on radio and television.

The Education Section plans to implement a certified safe hunting course in junior and senior high schools through the public school system in each parish. This is in anticipation of future mandatory hunter safety certification requirements expected to be passed by the state legislature.

The main problem that has faced the Louisiana firearms and hunter safety education program since its beginning has been the lack of adequate range facilities where classes of students can be taught to shoot safely. During 1981, the department initiated the policy of building and operating shooting ranges on wildlife management areas. Construction has begun on one range and several others are being planned. These ranges will be used for the hunter education program and will be open to the public for sighting in their rifles and shotguns.

The Information Section's staff-written news releases provide every newspaper and television and radio station in the state with public information about department activities as they relate to such areas as wildlife and fisheries management, environmental improvement, and the wise use of our wildlife and fisheries resources.

The news releases announce special hunting, fishing, and trawling seasons and regulations as well as any changes in regulations as adopted by the commission.

In 1981 the Information Section sent out 102 news releases. A review of the state's newspapers shows that over 80 percent of all these releases were used by newspapers and magazines all over the state. In addition, news features, with photos, on special department programs, are used by almost every newspaper receiving one.

Requests from the public for information average as many as 50 phone calls a day and 75 letters a day. These requests usually double prior to the setting of the waterfowl, general hunting, and shrimp seasons.

Office of Coastal and Marine Resources

Complete responsibility for managing the vast coastal and marine resources of the state lies with the Office of Coastal and Marine Resources supervised by one of two assistant secretaries reporting directly to the department secretary. The active arm of the assistant secretary of this office is the Seafood Division which traces its roots back to a program initiated in 1879 in recognition of the value of Louisiana's renewable oyster resources. Subsequent programs were later developed to protect, manage, study, and effectively utilize all commercially valuable marine resources of the state of Louisiana. Seafood resources have an annual dockside value in excess of $100,000,000. Programs of the Seafood Division are designed to promote effective utilization of these intrinsically and economically valuable resources through the proper understanding, conservation, management, enhancement, and protection of the numerous important commercial and recreational marine species.

The activities of the Seafood Division can be divided into eight distinct sections: statewide monitoring of seismographic activities; survey and control of oyster leases; coastal study area activities; monitoring of the Louisiana Offshore Oil Port; evaluation of Corps of Engineer permits for the coastal zone management program; federally funded research and development projects; marine laboratory; and aquatic kill investigations.

The assistant secretary in charge of the Office of Coastal and Marine Resources also supervises the Aviation Section which consists of three full-time pilots who play an important role in the department's law enforcement work, wildlife inventories, range surveys, and other activities involving airplanes.

Seafood Division

Seismic Section

Louisiana has an abundance of wildlife, including the highly valuable furbearers, oysters, shrimp, and waterfowl. Natural processes responsible for this high production of wildlife also created vast deposits of oil and gas, concentrated around deeply buried structures with little or no surface indication of their presence. Of the many types of instruments used in discovering these structures, the seismograph is the most widely used in Louisiana.

Seismographic exploration consists of the measuring of shock waves created by dynamite or other energy sources. Thus, the state was initially confronted with two apparently irreconcilable forces. On one hand were the trappers and fishermen, utterly dependent on forms of renewable wildlife resources thought to be highly sensitive to dynamite shock waves; and on the other, the oil and gas companies whose very existence depended on the discovery of new reserves. A compromise was worked out between the oil and gas companies and representatives of the trappers and fishermen, and regulations governing seismic work in Louisiana were promulgated.

This compromise permitted the oil and gas companies to continue seismographic work in the state, and at the same time safeguarded natural resources by imposing certain restrictions. To make possible comprehensive supervision, no company is allowed to conduct seismographic work without first securing a permit. Before work can begin, the company is required to inform this department by sending a "Notification of Beginning of Seismic Operations" form and plat with proposed lines. This department then sends a copy of this notification form and plat to the clerk of court of the parish in which the work is to be accomplished.

All permits for exploration operations are issued on a parish-wide basis, and are granted for a period of one year unless otherwise notified. However, operators must notify the Seismic Section of the Department of Wildlife and Fisheries upon beginning, interruption, and cessation of work in any area, and must keep the section informed of the name and address of the party manager, and the location and movements of the crew or quarter boat.

Seismic agents are assigned to one or more crews, and reports on the activities of the crew are filed weekly by the agents, and signed by the party manager. Reports include the section, township, and range of the shot points, type of energy source, if dynamite is used, the depth of the hole, size of the charge, type of ground where the explosion was made, and comments if there was any aquatic life killed, or any damage of any sort.

As of this date, there are 103 seismographic crews currently permitted to work in Louisiana; however, at present, the Seismic Section has only 28 seismic agents, three field supervisors, and a section head, with authorization to hire two more agents.

A reorganization plan has been submitted to the Department of Civil Service for its approval. It was recommended that this section consist of one section head, three field supervisors (statewide), eight district supervisors and 40 seismic agents.

All expenditures for regulatory supervision of seismographic operations provided by the Louisiana Department of Wildlife and Fisheries are totally reimbursable. Seismographic companies operating in Louisiana are charged a fee when a seismographic agent is assigned to the field crew. This practice stimulates income in the form of fees and is self-sustaining.

The seismic agent's duties are to inspect the work of field survey crews engaged in searching for oil or gas formations in order to prevent the destruction of, or injury to, fish, oysters or other natural resources; he checks the discharge of explosives and other energy sources for compliance with the rules and regulations governing seismic operations set by the Department of Wildlife and Fisheries. He observes that no littering occurs, and no pipes or other materials are discarded or left standing in the water or land without being properly lighted and marked. He keeps records and makes daily reports on the number of charges fired, hole depths, effects on wildlife, and other matters relating to the activities of seismic crews.

Oyster Survey

The department administers the waterbottoms of the state for the purposes of oyster cultivation. The oyster industry in Louisiana is based on private leases of public water bottom given to individual fishermen or corporations. Currently the Oyster Survey Section is in the midst of a development project which at its completion, will result in a series of precisely placed monuments by which oyster leases can be accurately surveyed or resurveyed. These monuments will aid the department in preventing conflicts between lessees, and will insure that the water bottoms are used to maximum potential in the future; during the year, 300 monuments were traversed, resulting in the control of approximately 200 square miles of oyster-producing area.

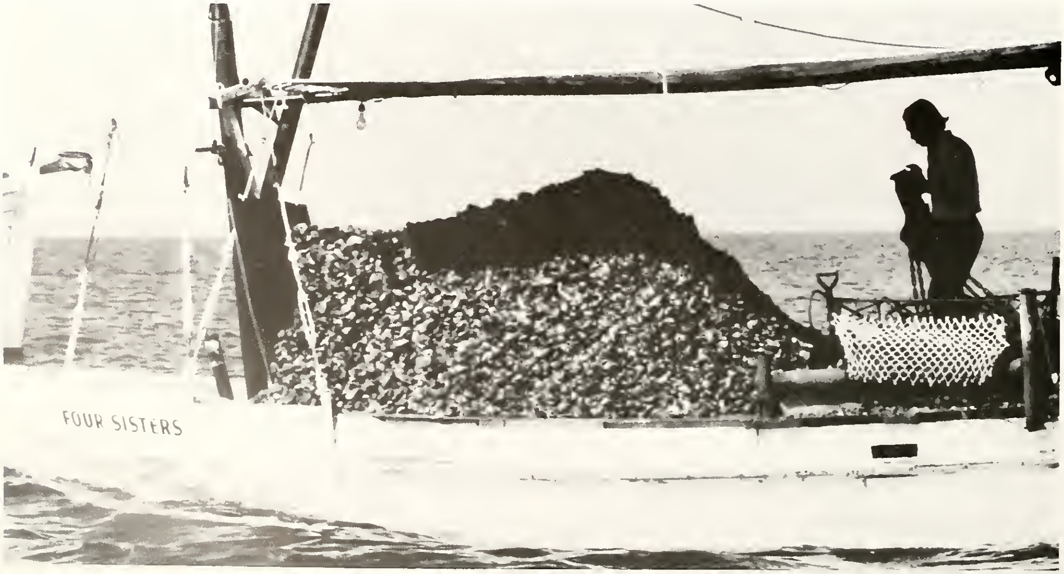
This section surveys lease applications, providing the lessee with a legal claim to the waterbottom leased from the state. The entire structure of Louisiana's oyster industry is dependent on the activities of the Oyster Survey Section.

During 1981, the section sold the following licenses: Shop and resale — 78; Tonnage — 975; Dredging — 461. In addition, 47 undersized dredge permits were issued.

During the year, 397 applications for survey and lease were received; 275 leases were issued, the result of 193 surveys by department crews and 82 surveys by private surveyors.

Coastal Study Areas and Coastal Hydrology Section

The Seafood Division extends its public services across the entire coast of Louisiana through a framework provided by seven coastal study areas. Each of these seven coastal study areas is supervised by a marine fisheries biologist, who, in addition to managing the division's environmental monitoring activities in that area, and leading research projects, also provides services to the public. These services range from simply answering questions from the general public, to performing technical surveys for oyster fishermen, to determining the nature of damages to oyster grounds. Along with the coastal study areas, the Coastal Hydrology Section monitors the environmental and fisheries conditions in the estuaries and near-shore waters.



Shrimp Monitoring The monitoring of the marshes and estuaries for juvenile shrimp occupies a significant portion of the total work of the coastal study areas. This monitoring is carried out primarily with trawls and plankton nets. The information gathered in this activity forms the basis for technical recommendations concerning the opening and closing of shrimp seasons. It has also provided a historical data base which has contributed significantly to our general understanding of the marsh and estuarine environment.

Sampling is regularly conducted, usually at weekly intervals. There are many phenomena which cannot be monitored on a weekly basis; these include tidal fluctuations, salinity pulses as a result of tides and wind, sudden temperature drops as a result of cold fronts, etc. To monitor these occurrences, the division has set up a network of continuous recording instruments throughout the coastal marshes and estuaries. The information gathered by these machines is particularly useful in predicting the future size of the inshore brown shrimp crop, in determining estimates of brown shrimp growth, and in a variety of other activities.

In 1981, the Coastal Hydrology Section modernized its monitoring system. These improvements included the replacement of conspicuous, failure-prone and bulky conductivity and temperature recorders with self-contained, submersible and miniaturized temperature, conductivity and salinity recorders (Endeco Type 972). A second improvement is the addition of digital current velocity and salinity recorders (Endeco Type 174). At the end of the year, all coastal study areas had Endeco 972 recorders installed, making reliable salinity and temperature data available to the biologists.

Prior to the 1981 brown shrimp season, primary environmental factors which influence the shrimp harvest coastwide were compiled, correlated and compared to previous years. A comparison of environmental parameters from 1967 through 1981 indicated that the spring of 1981 had the largest shrimp nursery, low rainfall, highest north and south Barataria Bay salinities, lowest river discharge, zero hours below 20° C, and the second highest April water temperature. Based on these results, it was predicted that the 1981 brown shrimp harvest would be high and this information was utilized by the administration in recommending the seasons.

In excess of 500 samples were collected in 1981 by the seven coastal study areas from permanent stations selected through years of experience. This gave the department an excellent foundation for the management of this valuable resource. Landings from the 1981 shrimp season indicated that it was one of the highest catch years of record, with a production of 66.9 million pounds (heads off).

Oyster Monitoring Monitoring of the oyster and seed grounds and public reefs is another major activity to which field personnel of the Seafood Division devote considerable time. The information gathered in these activities is used to make technical recommendations concerning the opening and closing of seasons. In addition to collecting production data from the seed grounds, personnel are active in collecting both biological and hydrological data. Spat (young oysters) are monitored through devices called Butler Plates which are deployed and collected weekly. Oyster mortality and size distribution on specific reefs are monitored by a series of dredge samples which are taken monthly. Both live oysters and recent dead shells taken in these samples are analyzed. Hydrological readings are also taken at a series of permanent stations on the seed grounds. These weekly readings provide documentation of both short-term and long-term changes in water quality, which may affect the oyster production on the seed grounds.

Both Sister Lake and Bay Junop were open to commercial fishing during 1981. As a result of shell planting activities in Sister Lake during 1979 and improved environmental conditions on both seed grounds, oyster production was higher than in recent years.

Production from Sister Lake occurred during two periods. During the portion of the regular oyster season in 1981 (January 1 — April 1), approximately 40,000 barrels of seed oysters were harvested. The square meter samples taken in Sister Lake during June 1981 indicated oyster populations, particularly on the 1979 shell plant, were extremely high (exceeding 500 barrels/acre). As a result, a 20-day special season was opened (October 12-31). During this time, 26,180 barrels of seed oysters were harvested.

The regular oyster season on the Bay Junop seed ground opened September 9. By the end of December, 7,300 barrels of seed oysters were taken from the bay.

Bay Gardene was opened to oyster fishing by permit on October 12, 1981. Ninety-six boats obtained permits, with approximately 30 fishing seed oysters. Approximately 19,000 barrels of seed oysters were produced. Fishermen ceased dredging after three days. The Black Bay shell plant of 1979 was in production in the 1981 season. Boarding report figures show a production of 177,824 barrels from approximately 1,400 acres of waterbottoms. This production is expected after bedding on private leases. This shell plant is presently in production with a considerable amount of seed oysters remaining.

Shell plants consisting of approximately 50,000 cubic yards of clam shell spread over 1,000 acres of waterbottoms in West Black Bay and Bay Craba were conducted by May and June, 1981. These shell plants are not in production as of this time.

In Calcasieu Lake, the transfer during May of 20,000 sacks of harvestable oysters from polluted waters to fishable areas was supervised by the division. In excess of 150,000 sacks of oysters were harvested from Calcasieu Lake during 1981.

Research Detailed analysis of Barataria Bay's 6-foot trawl data taken from 1962-present was initiated in 1981, with cooperation from LSU's Department of Experimental Statistics. These analyses will help better our understanding of the dynamics of inshore shrimp populations. In addition, two new shrimp research activities were started. One, entitled "Effects of Season's Opening on Inshore Brown Shrimp Populations in Barataria Bay," was undertaken in an attempt to both quantify and qualify the effects of season's opening on inshore brown shrimp populations. Trawl data collected and analyzed during 1981 revealed that approximately 70% of the brown shrimp present in inside waters at season's opening were harvested during the first seven days of the season, indicating that the Louisiana shrimp fleet is very efficient. The other study, entitled "A Study of Postlarval Shrimp Movement through Caminada Pass" will determine the spatial distribution of postlarval shrimp entering a tidal inlet and identify those environmental factors which affect postlarval movements.

The use of wing nets and channel nets in coastal Louisiana to harvest shrimp is perhaps the single most significant change in the shrimp fishery since the introduction of motorized vessels. With its appearance in the industry in the 1950's, this technique has restructured the shrimp industry in certain areas of the coast. Some parts have become almost entirely dependent on this method of fishing.

With this in mind, field work on a project entitled "A Study of the Wing Net Fishery in Louisiana" was initiated in 1981. Objectives of this study are (1) to develop a profile of the wing net fishery in Louisiana, (2) to monitor shrimp catch/effort and bycatch, (3) to examine inter-estuarine movement and emigration patterns of commercial saltwater shrimp, and (4) to correlate shrimp and bycatch data with specific physical and hydrological parameters. In 1981, samples were taken on randomly selected days during each moon phase (full moon and new moon) for the months of April through December.

Underutilized Species Biologists also monitor the developing purse seine fishery for underutilized species. This is done through periodic questioning of fishermen and dealers for information on the catches, and through trips on the purse seine vessels for firsthand observation and monitoring of the fishery. The majority of fish caught by the purse seiners was mullet, but black drum were also caught in large numbers. Fishermen were confronted with several problems including the handling of the large volume of fish caught, receiving payment for fish shipped to processors in other states, and also legal problems. This work will contribute to the development of a new fishery for Louisiana's fishermen and processors.

A port-of-entry is maintained at Grand Pass to provide for monitoring of fishery catches by out-of-state boats so that proper taxes can be levied and collected. During 1981, 387 out-of-state boats checked through the facility.

Crabs Division personnel were involved with the Blue Crab Subcommittee of the Gulf States Marine Fisheries Commission. This subcommittee was charged with the responsibility of developing a fisheries profile of the blue crab and coordinating efforts with other Gulf Coast states so that a future Gulfwide management plan for blue crabs may be realized. This work phase included meetings, workshops, and miscellaneous other duties.

Shell Dredging The privilege of taking shell deposits from any water bottoms within the boundaries of this state is granted by the Wildlife and Fisheries Commission based on the recommendation of the technical staff of the department and input from the general public. Contracts for shell dredging are let on a long-term basis at a fixed price of not less than 7½¢ per cubic yard. Lakes Pontchartrain and Maurepas and the Atchafalaya Bay area are the primary areas for shell dredging.

The shell dredging industry in Lakes Pontchartrain and Maurepas, which provides 1.3 million dollars in revenue annually to this department, is managed by a zone concept on a yearly basis. This concept allows for a large percentage of the lakes to be fished by all user groups without interference and allows for an adequate notice to crab fishermen before dredging companies move from one zone to another.

Louisiana Offshore Oil Port Project

Environmental monitoring of the Louisiana Offshore Oil Port (LOOP) by the department's Seafood Division began in 1978 and will continue as long as LOOP is in operation (an estimated 30 years), as mandated by state and federal licenses issued to LOOP. LOOP is a common carrier of crude oil built to accept oil from supertankers and distribute it to refineries. Facilities consist of an offshore pumping platform, pipelines and an inshore salt dome storage complex. The first supertanker offloaded oil at the offshore platform in May 1981.

As the entire LOOP system is constructed in the sensitive coastal and estuarine area of Louisiana, extensive sampling is done to determine the impact on waters and wetlands and to provide consultation and expert recommendations to reduce adverse impacts caused by the operation of LOOP. In 1981, regularly scheduled periodic sampling throughout the LOOP corridor to document existing conditions and to compare with past and future conditions continued. This included the sampling of biotic factors (demersal nekton, zooplankton, benthos) and abiotic factors (temperature, tide, winds, currents, sediments, and water chemistry). Aerial observations of the LOOP corridor also continued.

Offshore brine (a product of the leaching of the salt dome storage caverns) disposal by LOOP Inc. continued at levels of approximately 400,000 barrels per day and concentrations of 200 parts per thousand. The department's monitoring of the brine disposal continued; no environmentally harmful impacts of brine on marine organisms have been found. Data from 1981 is currently being statistically analyzed to determine if any impacts have occurred. In 1981, a sampling program to determine the effect of brine disposal on the zooplankton throughout the water column began. Preliminary data indicate that zooplankton is abundant at all depths in the brine discharge area. Also initiated in 1981 was a sampling program to determine salinity and temperatures at different depths in the offshore area. This cross-shelf profiling will provide helpful information on oil spill contingency planning.

Permit Review

The Louisiana Department of Wildlife and Fisheries is presently under contract with the Louisiana Department of Natural Resources (DNR) in a project for "Implementation of Procedures for Evaluation, Enforcement, Monitoring and Coordination of Coastal Use Permits." The main activities of this project consist of field investigation of proposed permitted activities in the Louisiana coastal zone. The Coastal Use Permit Section of the Seafood Division has the primary responsibility for conducting field investigations and coordinating other permit activities with DNR.

Prior to 1981, there were three field biologists assigned to conduct these field investigations. In early 1981, five field biologists were in the section; by May, one additional biologist was added for a total of six. This provided capabilities to readily conduct a projected maximum of 600 field investigations on permit applications per year, as well as the other surveillance and coordination activities as outlined in the contract between this department and DNR.

During 1981, a total of 207 field investigations were made on permit applications. Eighty percent of these were related to petroleum development. Dredging was included in 77% of those field investigations and pipelines were included in 19%. The parish with the highest number of field investigations was Cameron, followed by Plaquemines, Vermilion, Terrebonne, and Lafourche. During this time, DNR had received approximately 2,050 permit applications.

Several meetings between this department and DNR personnel were held during the year to discuss, coordinate and refine methods and techniques used in various field activities and field investigations. In addition, interagency meetings (including DNR, this department, U. S. Fish and Wildlife and Service, National Marine Fisheries Service, Environmental Protection Agency, and the U. S. Army Corps of Engineers) to discuss various permits and permitted activities in the coastal zone were attended regularly by Permit Section personnel. Numerous meetings and special field trips with various permit applicants were also attended, as well as a number of public hearings throughout the coastal zone.

In addition to the DNR permits reviewed and investigated by Permit Section personnel, permit applications to the U. S. Army Corps of Engineers involving oyster leases and other wildlife and fisheries resources were reviewed and department comments were prepared after considering comments by other staff biologists.

Federally-Funded Research and Development

The annual budget for federally-funded projects has been $400,000, 75% of which has been provided by federal funds under P.L. 88-309. Recent reductions in federal funding have reduced this source of revenue. This section has been a major factor in development of coastwide sampling programs and the development of scientific information. The department has asked for an increase in state funding to compensate for the loss of federal funding.

Biological research during 1981 included the completion and publication of Technical Bulletin Number 33 entitled "A Survey of the Recreational Shrimp and Finfish Harvest of the Vermilion Bay Area and its Impact on Commercial Fishery Resources." That study was jointly funded by Louisiana Department of Wildlife and Fisheries and the National Marine Fisheries Service, under P.L. 88-309 (Project Number 2-318-R).

For the federal-state project, "An Evaluation of Gill Nets of Various Mesh Sizes," field sampling terminated on March 31, 1981, and data accumulation, tabulation, and analysis began. These data were gathered over a two-year period, April 1, 1979 through March 31, 1981, from six stations located in Coastal Study Area IV. Both monofilament and multifilament gill nets were utilized at each location, once each month, throughout the two-year period. All organisms taken were identified, measured in five millimeter groups, and weighed. Additionally, blue crabs were sexed and examined for the presence of parasites and egg masses, and the gonadal stage and sex of spotted seatrout were determined.

A federally-funded project entitled "A Study of Areal and Seasonal Abundance of the American Eel at Selected Sites in Southeastern Coastal Louisiana" was completed during 1981. The project duration was from April 1979 through March 1981. A technical bulletin to be published in 1982 will provide information on the eel populations of the areas studied and insight into the problems of developing this fishery as a feasible economic venture for fishermen and marketing interests.

Marine Laboratory

The marine lab facility on Grand Terre has been in existence since the early 1960's. Although the direction and emphasis has changed over the years, the main function of the marine lab staff is to conduct applied research on economically important fish and invertebrates and on other pertinent marine ecological studies. Results from these research efforts are used to help manage, improve, and protect our marine resources. Besides research, the lab staff was also involved in many other activities which may be broken down into major groupings as follows:

1.) **Research** — Both long-range and short-term research projects are conducted by staff personnel to furnish applied data necessary for management, policy formation, and protection of our important species. Approximately 30 individual research projects are presently underway on such species as stone crab, blue crab, oyster, squid, clam, Gulf menhaden, Atlantic croaker, spot, speckled trout, redfish, sand seatrout, and black drum.

2.) **Monitoring** — Several monitoring programs are conducted by marine lab personnel. As part of the department's coastwide oyster spat monitoring program, the staff is responsible for sampling spat fall (young oysters) in Barataria Bay. These data may serve as an index for predicting recruitment of oysters on reefs. Salinity measurements are taken weekly at selected stations in Barataria Bay. The information is useful in the ecological assessment of some economically important marine species.

3.) **Development, Extension, and Management** — Under the general supervision of marine lab personnel, a shell plant was made in North Hackberry Bay in June and July of 1981. Ten barge loads (11,000 cubic yards) were sprayed overboard by high pressure hoses. The shell plant is being monitored to estimate success. Technical advice and extension-type services are provided to commercial fishermen on occasion. A total of 10 oyster complaints were investigated in 1981. Damage to oysters and oyster bottoms by industrial activities is a major concern in south Louisiana. Leases are examined by biologists and a written report generated.

4.) **Education** — The biological staff and facilities of the marine lab are available for various educational programs. Approximately 15 junior high/senior high groups and other conservation groups visited the lab in 1981 and were given lectures and/or demonstrations of field collecting techniques. In addition, several college marine ecology classes had overnight field trips at the lab.

5.) **Miscellaneous Activities** — Fish kills and pollution spills were inspected on occasion. Staff biologists also participated on various committees of state, regional, and national groups.

The major lab research undertaken in 1981, grouped by species, includes:

1.) **Oysters** — The spat catching ability of clam shell versus limestone was analyzed in one study. Limestone was superior to clam shell with respect to spat catch. Limestone is more expensive, but the cost benefit ratio (cost of product per spat caught) was superior with limestone. This may have implications for future shell plants.

The relationship of seed production and salinity regimes durig the previous year was evaluated in another study. Optimum salinity regimes were defined. Such data are very important for making recommendations concerning freshwater diversions from the Mississippi River.

A shellfish hatchery was designed and constructed and hatchery techniques were developed for production of oyster spat and clam larvae. Several research projects are presently dependent on spat and/or larvae supplied from the hatchery.

2.) **Shrimp** — The effect of the opening of the brown shrimp season on inshore brown shrimp populations was monitored. Preliminary findings imply that the opening date could have important bearing on total shrimp landings.

3.) **Stone Crab** — Preliminary analysis of data showed that there was no commercial concentration of stone crabs at the study site in Barataria Bay; however, interviews with commercial fishermen revealed that they occasionally catch a fair number of stone crabs and that there is a limited local market.

4.) **Menhaden** — In one study, the incidental bycatch in the menhaden purse seine fishery was evaluated. An average value of 2.7% by number and 2.4% by weight was obtained for the bycatch. The effects of the menhaden fishery on other species was considered insignificant.

In another study, the influence of environmental parameters (Mississippi River discharge, temperature, salinity, tide level, rainfall, and wind speed) on menhaden recruitment and oil yield was considered. Results of the study will help biologists predict quantity and quality (maximum oil yield) of the product; this is of great benefit to the industry.

In addition to the above research highlights, about 15 papers were either published or submitted for publication by lab biologists. It is anticipated that numerous important publications will result from research activities previously outlined. Biologists also gave oral presentations at five different scientific meetings, and attended several others.

Aquatic Life Monitoring Investigations

All fish kill complaints reported to the Seafood Division are investigated by the newly-established Fish Kill Section which replaces the Pollution Section which transferred to the Department of Natural Resources. The Fish Kill Section provides personnel to immediately investigate fish kills which are sporadic and widespread and not necessarily associated with industrial pollution.

From May 1981, when the section was established, through December, twenty-seven fish kills were investigated, with locations and probable causes recorded.

Aviation Section

The Aviation Section has played an indispensable role in the operation of the Louisiana Department of Wildlife and Fisheries during the past year. Law enforcement work, wildlife inventories, range surveys, and similar habitat inspection flights dominate daily activities of the section.

The typography of Louisiana's vast coastal marsh is such that law enforcement work and habitat surveys would be virtually impossible without the use of aircraft. Helping to control out of season shrimping in inside waters along Louisiana's four million acres of coastal marshes has been a major activity of the Aviation Section. Daily shrimp patrols are flown.

Department aircraft are also used in spotting night hunting, and in this type of patrolling, the department's excellent radio communications between planes, boats and vehicles makes the use of aircraft even more valuable.

One of the department's aircraft, paid for by federal funds, is used for taking aerial counts of waterfowl during the six month period when many migratory waterfowl are present in the state and for inspecting wintering habitat for migrating waterfowl. Use of this aircraft is restricted by federal regulations to specified and specialized flights.

Aircraft are often used in the rapid transportation of post-larval fish from hatcheries to rearing installations to prevent mortality.

The department's aircraft are always available for use during emergencies or times of natural disaster.